

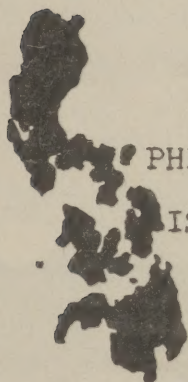
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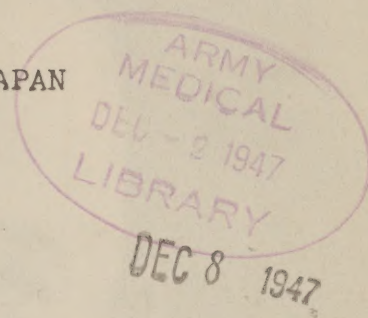
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CIRCULAR    NUMBER II

MEDICAL    SECTION

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## GENERAL HEADQUARTERS FAR EAST COMMAND MEDICAL SECTION

CIRCULAR LETTER )  
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NO. . . . .11 )

APO 500  
1 November 1947

### Part I

<u>SUBJECT</u>	<u>ADMINISTRATIVE</u>	<u>SECTION</u>
Organization of the Medical Section . . . . .		I
Major General R. W. Bliss . . . . .		II
Army-Navy Medical Procurement Office. . . . .		III
Prophylactic Supplies . . . . .		IV
Japanese Medical Research Laboratory. . . . .		V
Pre-Selection School Plan . . . . .		VI
Recent War Department and FEC Publications. . . . .		VII
Index . . . . .		Page 20

#### I. Organization of the Medical Section

There were no changes in commissioned personnel currently assigned or attached to the Medical Section during the period covered by this publication.

#### II. Surgeon General Visits Far East Command

Major General R. W. Bliss arrived at Guam on 27 September for a detailed study of medical service in the Far East Command. After visiting Guam and Iwo Jima, he proceeded to Japan. The first few days in Japan were occupied with conferences in the theater Surgeon's Office and in medical installations of the Tokyo-Yokohama area. After further inspection of Japan and Korea, and a tour of medical facilities in China and Philippines-Ryukyus Command, he returned to Washington, D. C.

General Bliss assumed the Surgeon General office 1 June 1947. Previous to that time he held the position of Deputy Surgeon General. General Bliss' army career extends over thirty-four years as a military surgeon. For the past three years, his observations of military medicine have taken him to every important part of the world.

#### III. Army-Navy Medical Procurement Office

The address of the Army-Navy Medical Procurement Office is changed from Naval Medical Supply Depot, Sands and Pearl Streets,

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Brooklyn 1, New York, to the Army-Navy Medical Procurement Office, 84 Sands Street, Brooklyn 1, New York.

IV. Prophylactic Supplies

The council for control of VD, GHQ, FEC, recommends that as an added measure in control of venereal diseases steps be taken to immediately stock and sell through Army Exchanges prophylactic items.

The council further desires that in addition to being readily available at all military units and at all supervised prophylactic stations, the following items be made available at all resort hotels, all leave centers and at all male and mixed billets, both military and civilian.

- a. Prophylactic, chemical, individual.
- b. Prophylactic, mechanical, individual.

These prophylactic supplies should be obtained through normal medical supply channels.

V. Japanese Medical Research Laboratory

Opening of the Lecker Research Laboratory was held 11 October 1947 at Nakanoku, Tokyo. The laboratory is cooperatively owned and operated by a group of drug manufacturers who will use its facilities jointly to conduct research work and assay products.

In addition to its laboratory equipment, the laboratory houses a small penicillin plant and it is planned that within the next year this plant will be producing regular allotments of penicillin.

The laboratory is available to all for assay of drugs within the physical limits of the building and its equipment. However, products must meet the pure drug standard prescribed by law before they will be approved for distribution.

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## VI. Pre-Selection School Plan

Impetus will be added to U.S. Army recruitment with the establishment of the pre-selection school plan which became effective on 15 September. This vital part of the Army's postwar program joins that of the U.S. Air Force in offering high school graduates the opportunity to select the technical training they wish before they enter the service. The similar Air Force Program was instituted in June and already is attracting high school graduates at the rate of more than 1,000 a month.

The Medical Department has established internships and residencies in Army General Hospitals and Army physicians are being assigned to leading civilian institutions for training in the medical and surgical specialities.

The United States Armed Forces Institute is supplementing this training in its general education program which includes 149 correspondence courses and 189 self-teaching courses in high school, technical and college subjects and university correspondence courses offered by 59 cooperating colleges and universities.

When the U.S. Army pre-selection technical school program went into effect during September, nearly one hundred additional courses which included scientific-medical-technical training was added to the list in which high school graduates will be able to choose before their enlistment is actually accomplished. The school to which the technical medical courses will be given under the pre-selection program is The Medical Field Service School, Brooke Army Medical Center, San Antonio, Texas.

Both Army and Air Force technical training programs are open to those who are willing to enlist for three or more years, a requirement designed to assure the services a minimum return on their training investment. Because of the high value in civilian life of skills learned in the services, short enlistments have proved uneconomical.

Emphasis is being placed on character under the new programs and applicants for both the Army and Air Force pre-selection school plans are required to furnish recommendation from reputable citizens attesting to their good reputation and character.

It is pointed out that while the pre-selection school programs are open only to high school graduates, non-high school graduates may acquire the necessary qualifications after enlisting in the Army.

# RESTRICTED

## VII Recent War Department And FEC Publications

AR 305-15, 25 August 1947, Control Administration, Reports Control System.

AR 600-115, 25 August 1947, Section III, Sick or Convalescent Leave.

AR 620-90, 16 September 1947, Civilian Employees, Employment of Pregnant Women.

CIR 229, WD, 21 August 1947, Sec. II, Furniture (Maintenance of Quartermaster).

CIR 230, WD, 22 August 1947, Industrial Mobilization Training Program.

CIR 234, WD 27 August 1947, Army Safety Program Reporting Procedures.

CIR 238, WD, 30 August 1947, Assignment of Hospital Patients.

CIR 240, WD, 3 September 1947, Preparation of WD AGO, Form 66.

CIR 243, WD, 4 September 1947, Sec IV, Officer Procurement, WD Circular 101, 1947 amended.

CIR 246, WD, 6 September 1947, Sec IV, Medical Department Officer (Assigned to Veterans Administration for Duty)

CIR 248, WD, 9 September 1947, Sec IX, WD AGO Form 74, Roster and Changes in Status of General Prisoners, General Hospital Listing.

CIR 250, 10 September 1947, SEC V, Screening of Personnel for Overseas Movement.

CIR 252, WD, 12 September 1947, Sec III, Discharge (Married Female Personnel).

CIR 255, WD, 13 September 1947, Sec III, Graduate Medical Professional Training (Applications)

CIR 256, WD, 16 September 1947, Sec I, Initial Report of Death. Instructions.

CIR 4, Department of the Army, 22 September 1947, Sec I, Influenza- Vaccination Procedures.

WD Memo 40-590-9, 11 April 1947, "Addresses of Non-Federal Authorities Regarding Hospitalization of Psychotic Patients".

# RESTRICTED

WD Memo 40-590-7, 17 December 1946, "Convalescent Program in Army Hospitals".

BULLETIN 15, WD, 15 August 1947, Military Appropriation Act, 1948.

BULLETIN 17, WD, 20 August 1947, Sec VIII, Professional and Scientific Service in War and Navy Departments.

BULLETIN 18, WD, 21 August 1947, Officer Personnel Act of 1947.

GENERAL ORDER 80, WD, 22 August 1947, Sec IV, ROTC Units (Medical ROTC Units Established; returned to Active Status).

FIELD MANUAL 71-30, 3 July 1947, Employment of Airborne Forces, Sec VIII, Medical Care and Evacuation.

CIR 95, GHQ, FEC, 26 September 1947, Sec II, Maintenance of Medical Department Property and Equipment (Sec II, GHQ, FEC, Cir 85, 1947 amended).

## PART II

<u>SUBJECT</u>	<u>TECHNICAL</u>	<u>SECTION</u>
Preliminary Report of Activities of Field Team of Army Epidemiology Board in the FEC . . . . .		VIII
An Ether Sedimentation Technique for Routine Stool Examinations . . . . .		IX
Poliomyelitis Summary, 361st Hospital. . . . .		X
Partial Dentures . . . . .		XI

VIII. Preliminary Report of Activities of Field Team of Army Epidemiology Board in the FEC by W. McD. Hammon, M.D., Gordon Meiklejohn, M.D., Jordi Casals, M.D., and Don M. Rees, Ph.D.

The four members of the Virus and Rickettsial Commission of the Army Epidemiological Board making this report left Fairfield Army Air Base, California on 28 June 1947 and arrived in Tokyo on 1 July. Two members left Tokyo to return to the United States on 29 August and the other two departed from Okinawa on the same day.

### Epidemiological Studies in Japan

At the time of the Commission team's arrival, it was learned that among American troops there were numerous hospitalized cases of "aseptic meningitis" or "encephalitis", and a few cases of poliomyelitis. These were studied carefully. Most of the non-paralytic cases had normal leucocyte counts or a leucopenia, had a spinal fluid

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similar to that seen in poliomyelitis or encephalitis, had temperatures up to 103° or 105° F. with a total duration of 5 to 14 days. It was the opinion of the clinicians of the Commission that a number of these cases were probably not poliomyelitis, but that some were. Soon many cases of frank poliomyelitis were seen.

Lectures on the diagnosis and treatment of poliomyelitis were given by commission members at several special meetings in various cities in Japan, and many hours of bedside teaching medical officers was provided. Drs. Meiklejohn and Hammon made trips almost daily to some hospitals in Tokyo and when requested, occasional visits to see many other cases in consultation in the area from Osaka and Kyoto to Tokyo. Advice was given in regard to isolation techniques, duration of hospitalization, evacuation and special procedures for handling suspect and abortive cases.

At the time this report is being written, cases are still occurring and figures are incomplete. Since no positive clinical differential diagnosis could be made between non-paralytic poliomyelitis and other forms of meningo-encephalitis, these are all classified as non-paralytics. However, except for the first cases observed, it is felt that most infections were poliomyelitis. Only those with positive spinal fluid findings are included in the tabulations, although many others might have been included as "abortive" poliomyelitis on a less substantial basis.

Arrangements were made for telephone or radio reporting of all suspect cases, from all parts of the theater. Blood sera, feces and clinical abstracts were requested on every case. Feces were frozen and selected specimens for tests for poliomyelitis virus have been shipped to the States. These tests probably will be made in San Francisco. Each blood serum as received was immediately tested by complement fixation for Japanese B antibody. Except for cases discussed below, practically all were found to be negative. Many specimens were frozen after the one test, and brought back to San Francisco for further study.

It is interesting to note that the military and War Department civilian employees were first to be affected and that cases among civilian dependents began at a later date.

Certain data on Japanese cases of poliomyelitis was also obtained. In August, Drs. Meiklejohn and Casals investigated cases reported at Niigata. Fifty-two paralytic cases had been reported in young children, their dates of onset beginning in March and continuing through July with the peak in June. In this group, many typical severe paralytic cases were observed by the Commission team members.

The Commission hopes to be able to present a valuable analysis of clinical findings on this large group of cases of poliomyelitis in young adults. Outstanding findings obvious at present are: normal leucocyte counts and predominance of a severe headache. The conspicu-

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ous tremors, which were observed in the San Luis Obispo Navy outbreak, were not noted in these patients.

Two adults were found to have complement fixing antibody titer rises for Japanese B encephalitis during their period of illness. One, diagnosed clinically by the hospital staff as "lymphocytic choriomeningitis", received his third vaccine inoculation between the two bleedings, offering a possible explanation for the rise (0 to 1:2 on first bleeding to 3 / at 1:16). The other (titer 0 at 1:2 changing to 4 / at 1:8, the last dilution tested) was reported clinically as "influenza". All efforts to obtain information regarding the course of his illness have been fruitless to the present. Either or both of these cases could represent infections with Japanese B encephalitis virus since no other American adults tested, normal or ill, on Honshu, showed such levels of complement fixing antibody, and in these two persons titers rose during illness.

Among Japanese civilians 38 were reported as Japanese B encephalitis or as suspect cases. Many of these patients died before two specimens of blood could be obtained. Only two autopsies were performed. Fixed tissue alone was submitted for one case, and a specimen in blycerine was received from the second. Numerous cases about the Tokyo area were seen by the Commission team members, and in mid August, a group was seen near Kochi or Shikoku by Dr. Casals. Only three of these latter could be proved by complement fixation to be Japanese B encephalitis. These were persons of age 60, 27 and 10 years, with dates of onset from 27 July to 9 August. More cases have been reported from this same area, and more recently about 20 from Kagawa, a Prefecture in northern Shikoku and from Okayama, but convalescent sera from them have not as yet been received. Many of the other cases seen and reported were clinically severe encephalitides, but of undetermined etiology, not Japanese B type on the basis of complement fixation tests on available sera. Further laboratory testing on later sera both by protection tests and by complement fixation may prove other cases to have been caused by the Japanese B virus. From the number of recent reports from Kochi and Kagawa on Shikoku, an epidemic might develop there, and still later on Honshu. Because of the lateness of the season, however, a serious epidemic is not likely to occur.

On observations made in the Tokyo-Yokohama area, and other urban areas visited, members of the Commission team and others tend to agree that fly and mosquito control is quite effective. This appears to be due to the combined efforts of the military and of the civilian teams, the latter organized, trained and directed by the Public Health and Welfare Division, and administered through Military government. The progress along these lines made during the past two years appears little short of miraculous. Members of the Commission were pleased to observe that many of their original recommendations in this regard have been carefully carried out. Good screening has been installed in most billets, offices and dependents' dwellings, and mosquito nets have been made available. Flies in Tokyo are just about as scarce as they are in San Francisco. In many rural areas, fairly effective mosquito larval control

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has been attained by the use of pyrethrum emulsion on rice paddies and by DDT dusting. In other areas, much remains to be accomplished. Residual DDT spraying has been carried out extensively in military installations and in Japanese civilian public buildings, in common carriers, and in many dwellings. DDT in Japanese "benjos" (toilets) is probably the greatest factor in urban fly control.

Further recommendations for poliomyelitis control have been restricted to prolonging isolation of cases to four weeks, quarantine of child contacts and food handler contacts, isolation of suspected cases and precautions of a general nature to avoid unnecessary and intimate contacts and excessive fatigue.

Intensive mosquito collecting was carried out principally in animal shelters and houses in the Tokyo area and in several other localities including Okayama, Kyoto, Toyama, Sendai and Hokkaido. The team was assisted in making these collections by Dr. Y. Sasa, Dr. T. Miura, Dr. K. Asanuma, Lt. James P. MacLaren, and Capt. Walter J. La Casse (sn.Co.). All mosquitoes were identified and frozen by Dr. Rees. They will be shipped frozen by courier to the Army Medical School for reshipment to Dr. Hammon's laboratory in San Francisco. Attempts will be made to isolate virus from these specimens. The total number frozen is 11,408.

Although Dr. Albert Sabin had made previous arrangements for Dr. Sasa to collect specimens to be shipped to him this summer to verify unexpected results obtained in tests made by Dr. Sabin in Cincinnati, members of the Commission team found the existing conditions under which the handling of these specimens was actually taking place was highly unsatisfactory, i.e. that contact with virus, prior to shipment was quite possible. Furthermore, Dr. Rees found the naked eye identifications of Dr. Sasa to be not completely reliable. For greater reliability, Dr. Sasa was supervised by Dr. Rees thereafter and all of his collections handled at the 406th Laboratory, one-half of these being sent to Dr. Sabin. Collections made by Dr. Miura were also divided with Dr. Sabin, but the identification of Dr. Sabin's portion of Dr. Miura's collections was not always checked by Dr. Rees.

Trips were made to Seoul (Korea) and to the 34th General Hospital (Korea) by both Drs. Hammon and Meiklejohn on requests for consultation on poliomyelitis patients in that country. Several days were spent at each visit and time for the most part, was used in teaching, and in clinical studies of patients. At the monthly meeting of medical officers in Korea held at the 37th Station Hospital, Dr. Hammon gave a talk on the diagnosis and treatment of poliomyelitis. No cases of encephalitis have been seen or reported in Koreans or in Americans from that area. All serological tests on routine blood specimens sent from Korea were found to be negative for Japanese B encephalitis, except for sera of two patients. In one instance both sera had the same titer while in the other only one specimen has been obtained.

# RESTRICTED

## Okinawa

Early in July, Dr. Meiklejohn went to Okinawa to acquaint the Surgeon there with the Commission team's program, and to arrange to have notification of suspected cases and specimens sent to Tokyo. During his visit, he noted that malaria was present and that in troops it was increasing at an alarming rate. Recommendations were made for more effective rice paddy control for Anopheles and Culex tritaeniorhynchus. He noted that thousands of natives had infiltrated into the entire southern part of the island which is occupied by troops, and that flooded rice paddies surrounded or were adjacent to most troop areas.

A group of 42 vaccinated and unvaccinated Philippine Scouts was bled and the sera tested by complement fixation. Results were rather puzzling, and further checks must be made before interpretation is possible.

Dr. Hammon visited Okinawa on 26 July to 28 July (en route to China). At the 37th Station Hospital, he found a severe case of encephalitis in a negro sergeant from Kadena Air Field Area. Onset in this case was on 21 July, and the patient was hospitalized 25 July. He had been vaccinated as follows: 1.0 cc on 15 May; 1.0 cc on 22 May and 0.1 cc intracutaneously on 19 June. Following hospital admission, the patient rapidly became comatose, but lived until 1 August. Autopsy material in ice was sent by courier officer to Tokyo, but arrived in a thawed condition - tissue decomposed - and no virus could be isolated. However, serum taken three times during the illness showed a definite rise in titer to complement fixation, from 1:2 to 1:4 to 1:32 (11th day). Sections of brain showed changes compatible with the diagnosis of Japanese B encephalitis.

Four typical cases of encephalitis were observed by Dr. Hammon in Okinawa at Jinouza Hospital, and several previous cases and fatalities were reported. Blood sera were collected from all of these cases.

Dr. Hammon's next trip to Okinawa was from 2 August to 4 August (returning from China). Additional native cases were observed at that time and further specimens collected.

On 9 August, Drs. Meiklejohn and Rees and Lt. MacLaren, SnC. of the 406th Medical General Laboratory went to Okinawa and began mosquito collections. They found intensive larval breeding in rice paddies in many areas adjacent to military posts, although reports from nearly "collecting stations" of the one malaria survey unit said "under control". Light trap collections made on or near several military posts brought catches of 1,000 to 1,700 mosquitoes in one night, principally Culex tritaeniorhynchus. On the basis of instructions from PHILRYCOM there had been no airplane spraying of rice paddies (except for a few helicopter experiments with a hand duster) on Okinawa in 1947 and most of the activities of the meagerly staffed control units (Philippine Scouts and Okinawans) were being directed to the application

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of residual DDT to the interior of buildings with some hand dusting of a few rice paddies. Again it was found, as had been demonstrated in 1945 and 1946, that Culex tritaeniorhynchus did not rest inside buildings, but in other shelters and in vegetation. At this time resistance to airplane spraying and extensive rice paddy control was partially overcome and one L-5 did several days of spraying near the hospital.

By this time, 42 native cases had been reported to the Military Government, and a large group of patients seen and bled by Dr. Meiklejohn at Koza, in the Kadena Air Base area.

A second American, with onset on 4 August was admitted to the hospital on 5 August and the patient died on 9 August. This patient, the wife of an American sergeant had been living near Kadena Air Base and had not been vaccinated. Three blood sera taken on the 1st and 5th days (2 taken on the 5th day) of her illness were sent to Tokyo together with autopsy material. No complement fixing antibodies appeared in the sera, but neutralizing antibody for Japanese B virus was manifested both by intraperitoneal and intracerebral technics. A virus was isolated from the brain. After one and two mouse passages, the antigen prepared from mouse brains failed to react with Japanese B antisera (though infectious titers were above  $10^{-8}$  in the second passage) and the virus was not neutralized by the same hyperimmune serum. Further study is required to identify this agent.

On 17 August, Dr. Hammon and Lieutenant MacLaren returned to Okinawa for four days of study and collection of mosquitoes and blood specimens, and for conferences on mosquito control. Together with Colonel J. C. Fitzpatrick, MC of the Surgeon's Office, Tokyo, several conferences were held with surgeons on the island, mosquito survey and control personnel, engineers from Tokyo and Okinawa and an entomologist, Mr. A. W. Morrill, from Manila. It was agreed that there was obvious lack of effective control (400 per cent increase of malaria in August over July) and recommendations were drawn. These were then presented by Colonel Fitzpatrick and Dr. Hammon to Brigadier General Hayden of Ground Forces and Major General A. F. Hegenberger of the Air Forces on Okinawa. Immediate action was taken. Large control units were formed and training begun. Equipment and materials for ground and air control were available. Planes took to the air to spray DDT on rice paddies and surrounding vegetation in large open areas. Night collections were made, and mosquitoes found feeding on large mammals or resting in houses were taken alive to Tokyo, identified and then frozen.

By this time the reported total of native cases of encephalitis was in excess of 60 and obviously this was only a sample of what was occurring. Many native hospitals in remote parts of the island had not been visited and only a small portion of cases had been seen at hospitals or by the few Okinawa doctors (opinion of native doctors). Thus it appeared that this epidemic was equal to, or greater than that

which occurred on this one island in 1945. On 20 August, sera were collected from about 40 native patients and from a group of 20 normal children (all to be used for serological studies on encephalitis and poliomyelitis). About 15 new cases were seen. Onset in these had occurred after the departure of Dr. Meiklejohn. Most of these cases were from the southern part of the island, just north of Naha, and near the 37th Station Hospital.

From the company of the first American Patient, 50 volunteers were bled. The 50 sera obtained were all tested for complement fixing antibody and seven (14 per cent) were found to have titers of from 1:4 to 1:32. This should probably be interpreted as indicating recent infection, in view of the hundreds of negative tests on sera from vaccinated troops in Japan and some earlier sera from Okinawa (drawn by Dr. Meiklejohn in early July). This infection rate of 14 per cent is much higher than the clinical malarial infection rate for any troops on the island. A record of all those who had visited the dispensary during the previous six weeks because of any illness associated with fever was made. None of the seven positives had been to sick call, and only one admitted any mild illness at the time of bleeding. This occurrence of inapparent infection among troops confirms similar observations by Hammon in Okinawa in 1945.

To date, serological diagnosis (complement fixation) has been made for 10 native Okinawan cases. This number represents almost all of those from whom two specimens were obtained. In most instances, antibody can be detected between the 10th and 15th day. All tests have been made with the benzene extracted antigen of Espana and Hammon and the results have been clear-cut and apparently specific in all cases in which the serum was not anticomplementary.

Because of the recognition of an epidemic state, all troops and American civilians were given a fourth inoculation of vaccine (1.0) on 20 and 21 August.

Drs. Meiklejohn and Casals returned to Okinawa on 25 August and left for Guam and the United States 2 September. They saw many more native cases, obtained follow-up blood sera, and made further clinical observations. The total number of native cases reported was 126 by then with 32 deaths, but it appeared that the peak of the epidemic had been passed. They also bled 100 American troops from three other areas to determine inapparent infection rates and the serological effect of the fourth dose of vaccine. Blood sera are being kept frozen in San Francisco where an attempt will be made to isolate virus from those found free from antibody.

The negative sera drawn earlier from the company which showed seven positives, and the sera from normal Okinawan children will also be inoculated in mice and an attempt made to isolate a virus from an active infection. These inoculations will be performed because this group of Commission members has come to believe that man himself might

be a source of virus for mosquitoes. Large domestic mammals are present in very small numbers (0 - 5 per village) there, and most of the studies on birds to date have not supported the theory that they play a role as a source of infection in Japanese B virus infections.

On returning to San Francisco, it was discovered that an American civilian who had not been vaccinated developed an acute encephalitis with high temperature, delirium and other characteristic symptoms on board ship after leaving Okinawa. His acute onset was 9 August 1947. Dr. Leon Lewis, (Associate Professor of Health, University of California School of Public Health, and formerly Acting Director of the Military Government Encephalitis Research Hospital on Okinawa in 1945) has just seen him at the Letterman General Hospital in San Francisco, and finds residual tremors and a spastic gait, also confirming a clinical diagnosis of encephalitis. Blood serum for testing has just been received at this laboratory, and is positive to Japanese encephalitis, titer 1:32. This is strong presumptive evidence.

## Laboratory Experiments

### Time of Infection of Domestic Mammals

A large number of horses were bled in the Yokohama and Okayama areas of Japan in June and those found free of neutralizing antibody were bled at 10 day intervals throughout the season. The sera thus obtained will be tested to determine if and when antibody appears, thus possibly giving information as to the season of infection for mammals other than man. Other mammals, principally caged rabbits, are being similarly "exposed" and are under observation by serial bleedings. Major Burns (V.C.) is carrying out these studies.

### Mosquito Transmission

Four experiments were undertaken to confirm those of the Japanese on mosquito transmission. Culex tritaeniorhynchus infected by feeding on virus suspension was demonstrated to be capable of transmitting the virus to the mouse. The first experiment with Culex pipiens was unsuccessful because mosquitoes failed to feed on the mice, but in experiments 2 and 3 feeding did occur. In experiment 2, positive results were obtained but mice were still under observation in experiment 3.

### Complement Fixation

An unusual opportunity was available to extend observations on the effect of inoculation with Japanese B vaccine on complement fixation, using a more sensitive antigen, and to determine the suitability of the new antigen in routine work.

Over 100 health individuals in military service vaccinated with Japanese B chick embryo vaccine in April and May 1947 were tested for complement fixing antibody. The blood was drawn on 27 May and kept in

dry ice. The course of vaccination consisted of three injections; either 1 cc subcutaneously each or 0.1 cc intracutaneously each, or 1 cc subcutaneously once plus 0.1 cc intracutaneously twice. We confirmed previous observations (by Hammon and Sabin) to the effect that no complement fixing antibody was detectable; only two of these sera gave partial fixation in dilution 1/2. Similar observation was made with the sera from individuals, both military and civilian, who had been vaccinated in June and July, and who in July and August developed poliomyelitis or some other closely related disease. About 150 patients were bled two, three or four times, on the average of two weeks to one and one-half months after vaccination. Only three gave a positive reaction against Japanese B antigen in dilution 1:2. Two individuals discussed above, had higher titers, titers which rose during their illnesses. These illnesses could possibly have been infections with Japanese B virus.

In conclusion, it may be stated that most adult individuals bled between 2 weeks and 3 months after vaccination show no complement fixing antibody against Japanese B; only two or three per cent show a partial fixation in dilution 1:2.

In contrast, a group of 30 children under 10 years of age, some of whom were hospitalized with poliomyelitis or suspected poliomyelitis, behaved in a somewhat different way. Eight, or 26 per cent, gave a positive complement fixation test with Japanese B antigen, of which three had a titer of 1:8 or better; 4 had a titer of 1:4 and one had a titer of 1:2. These sera were collected from 1 to 34 days after vaccination. The conclusion is that probably the dosage per unit of body weight is responsible for this difference in behavior.

#### Conclusions

1. The troops and American civilians in Japan, Okinawa and Korea be vaccinated annually on the dates recommended for 1946 but that the amount of antigenic material given adults be increased two to five-fold. This will require further research on methods of concentration. Until a concentration method has been devised, it is suggested that either the series of inoculations be extended or twice the dosage given. Intracutaneous vaccination is not recommended for it appears to be slightly less effective, more painful, produces more severe local reactions and requires more time to administer.

2. There should be no relaxation of the mosquito and fly control program practiced by the Army and by the Public Health and Welfare Division through Japanese in Japan, but that this program be extended in 1948 within reasonable limits. There was evidence in Korea that the program needed additional supplies and supervision. On Okinawa, steps should be taken to have an intensive and effective mosquito control program including airplane spraying of large rice paddy areas under the supervision of someone with extensive experience on Pacific Islands in mosquito control and survey methods. Nothing should be spared in the way of supply and equipment.

3. Further attempts be made to provide means for research on the neurotropic virus infections threatening American personnel in the Orient, preferably through an uninterrupted rather than a series of short term projects.

## IX. An Ether Sedimentation Technique For Routine Stool Examinations

Modifications of the Telemann<sup>1</sup> ether sedimentation technique have been developed in recent years specifically for the diagnosis of schistosomiasis. The technique described below has been used routinely for one year on approximately 12,000 stools for the detection of protozoan cysts and helmonth ova of all intestinal parasites. The results obtained indicate that this modification is far superior to the direct smear for recovery of protozoan cysts and compares favorably with commonly used concentration technique for recovery of helmonth ova.

Comminution of the stool - Partial comminution of the entire stool, with an appropriate amount of saline, can be accomplished in the stool box. A suitable amount of saline will make it possible to recover 10-12 cc of strained emulsion, which when centrifuged will yield 1-2 cc of fecal sediment.

Straining - Two layers of gauze are satisfactory. The emulsion is collected in a 15 cc centrifuge tube.

Washing - The emulsion is centrifuged and decanted. Additional washings are advantageous.

Formalization - The remaining fecal sediment is thoroughly mixed with 10 cc of 10 per cent formalin (this reduces distortion of protozoan cysts). Five minutes should be allowed for fixation.

Addition of ether - About 3 cc of ether are added to the formalized specimen. The tube is stoppered and vigorously shaken. The specimen is then centrifuged at a relatively slow speed (at #2 on the angle-arm table centrifuge) for about two minutes. Ether, superficial debris and formalin are completely decanted, using an applicator to free the superficial debris from the centrifuge tube.

Coverslip preparations - The sediment remaining in the centrifuge tubes is mixed thoroughly with the fluid that drains back from the tube wall, and poured onto a glass slide. An applicator may be used to drag the few drops to the lip of the tube, and is especially useful in controlling the amount of sediment that escapes onto the slide. An excess should be avoided. A small drop of 2 per cent iodine solution is placed near the drop of sediment, and mixed with it by using the edge of a coverslip. Finally the edge of the coverslip is pushed into the drop, allowing the fluid portion to run under the cover glass; and, at

<sup>1</sup>Telemann, W. 1908. Eine Methode zur Erleichterung der Auffindung von Parasiteneieren in den Feces. Deutsche Med. Wchnschr., 34; 1510-1511.

the same time, pushing the coarse debris aside. This step is critical in obtaining a suitable microscopic preparation.

Further studies with this technique are being carried out at the present time.

X. Poliomyelitis Summary, 361st Hospital, by Captain F. J. Mayer, MC, Chief of Contagious Section and X-Ray.

The attached table gives the clearest picture possible of the first ten (10) weeks of a poliomyelitis epidemic in the Tokyo-Yokohama area which apparently began with a fatal Bulbar case admitted 18 June 1947. This patient was a combined type rather than a pure Bulbar case, exhibiting weakness of the right deltoid, triceps and biceps muscle groups in addition to pharyngeal and palatal paralysis. He apparently died of asphyxia within forty-eight (48) hours of admission, and before transfer to the Contagious Section. Seventeen (17) days elapsed before the next case was admitted on 5 July 1947, but thereafter there were daily admissions throughout the period covered, with few exceptions.

At no time was any other diagnosis but that of poliomyelitis seriously entertained and the cases admitted to this hospital were managed accordingly.

A general comparison with approximately twenty-five (25) cases seen at this hospital from 13 August 1946 to 17 June 1947 (mostly sporadic cases), reveals at least two important differences. None of the present series of cases showed any sensory changes, whereas several of the previous cases showed marked sensory involvement, and the incidence of Bulbar involvement was far higher than before. In addition, the virulence as judged by mortality, respiratory paralysis and the general course of the disease in most cases appeared to be much higher in the present series.

Symptomatology and Course - The patients were usually admitted on the third to fourth day of onset although those who showed a bicameral type of fever curve, and these numbered about a fourth of the cases, were not seen usually until the sixth to eighth day. These periods shortened as the season progressed and the public and all concerned became more aware of the disease, so that many patients were seen in August on the 1st and 2nd day from onset.

The symptoms were those of fever, headache, and muscle spasm, pain or soreness. The latter was almost invariably in the posterior neck muscles, usually in the back muscles and frequently in the hamstrings. The signs of meningeal irritation could invariably be elicited and usually were not equivocal. The most constantly present, and perhaps the most important clinical diagnostic sign was the so-called Spine Sign or splinting the back in the sitting posture with the arms in tripod position. Irritability, apprehensiveness, lethargy and toxicity were usually present

in some degree and were found to be valuable prognostic signs when exaggerated, especially if temperature over 103° F. was also present. These patients invariably did poorly.

Paralysis occurred usually on the 2nd to 4th day from onset, reaching its maximum in 48 - 72 hours. There was rarely any increase of paralysis after 6 to 7 days from onset or after the fever subsided.

Lumbar puncture usually revealed decreased pressure, normal mechanics, increased cells, globulin, and total protein. 0 - 10 cells were considered normal as was 15 - 45 mgm total protein. Cells varied from 11 to 1000 per cu. mm, usually 90 - 100% Lymphocytes although several cases showed 50% or more Polymorpho-nuclears. All cultures were negative. Approximately one-fifth of the cases had normal initial L.P.'s. Two or three including one Bulbar case were normal on admission and on the 10th and 28th days after admission. There was usually a polymorpho-nuclear leukocytosis with shift to the left, 9 to 14,000 in adults, 10 to 20,000 in children.

Paresis was usually scattered, often regional, almost always flaccid in type and varied from monoplegias to quadriplegias with or without trunk, neck or respiratory involvement. There were four with quadriplegias and various other involvement. Definite early spastic paralysis with encephalitic signs was seen in two cases. The difficulty of judging minimal paralysis was illustrated by two cases with hamstring and posterior back muscle spasm in whom weakness was not demonstrable for 7 - 10 days. These patients were regarded as non-paralytic until minimal quadriceps, hamstring and gluteal weakness was noted, after the febrile stage was over.

Some interesting diagnoses met with were Tuberculous Meningitis, Hysterical Paralysis, Japanese B Encephalitis, Benign Lymphocytic Choriomeningitis, Pseudo-Bulbar Palsy Meningitis, Subdeltoid Bursitis with Pseudoparalysis of arm.

**TREATMENT** - All Bulbar cases, combined cases or those with any marked paralysis were given Oxygen inhalations 10 - 15 minutes of each waking hour and placed on the Seriously Ill List. Bulbar cases had tracheotomy set, intubation set, tongue blades, suction machine and mouth gag at bedside. As moscher tubes could not be obtained, anaesthesia breathers were kept at the bedside. Elevation of foot of the bed, and postural drainage, side and abdomen, were used. Suction was used in such a way as not to precipitate gagging or retching. It was thought that early and elective tracheotomy was indicated in the presence of repeated gagging, one mild choking attack, increasing efforts to clear throat, or demonstrable inability to swallow (pooling of saliva in hypopharynx) in a toxic, apprehensive and jittery patient. Two elective tracheotomies were done.

Intravenous glucose, saline and vitamins were used for more severe Bulbar cases and these received nothing by mouth until the acute phase of the illness had subsided. Prost'igmine and KMnO<sub>4</sub>

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irrigations were used on all cases with bladder paralysis.

Kenney packs were begun on all paralytic cases two to four times daily as the temperature began to subside and these patients got added salt.

Muscle salvaging was begun usually at about the same time and included active, and passive exercises, powder boards, massage, sand-bagging, foot boards, bed boards and other devices to prevent contraction deformities and reeducate muscles.

Most of the respirator cases had spinal respiratory paralysis. In the Bulbar cases only, signs of central respiratory paralysis were considered to indicate the need for a respirator. At least, two cases with a partial (lower) intercostal paralysis were never placed in a respirator, although one, an eight-months old infant, required an oxygen tent for several days. In cases with intercostal paralysis, the respirator was used only if there was cyanosis or other obvious sign of oxygen deficit or increasing fatigue.

Several periods of instruction were given for the nursing staff on Kenney packs, respirator, care of the Bulbar case, and allied subjects. All patients are kept in strict isolation for two (2) weeks and partial isolation (fecal decontamination) on a convalescent ward for two weeks.

All surviving paralytic cases have shown definite return of muscle function, some showing marked improvement. Physiotherapy and frequent muscle function testing has been used extensively on the theory that early, thorough, and on-the-spot rehabilitation is of more importance to the patient than efforts directed at early evacuation.

Consultation with Civilian and other Army consultants was made use of frequently. N.P. and orthopedic consultation were also used. The policy on disposition has been to return all non-paralytic cases to duty status, but in view of the large percentage of Civilian cases, including children, the policy has been to individualize the other cases, taking due account of the sociological aspects evolving from the fact we are a mixed type occupation force here in Japan.

DEATHS - The first death was discussed above. The second death was a 10 year old child admitted by transfer at 4 p.m. one afternoon. He spiked temperature to 105° and died at 11 a.m. the following day of central respiratory involvement after four and one-half hours in the respirator. The third death was a 30 year old male who died after three days in the respirator of Broncho-pneumonia, cardiac failure and pulmonary edema. He had asthma also. The fourth death was a 30 year old female with marked Bulbar signs who developed sudden pulmonary edema after several hours of agitation the day after admission. Successful tracheotomy had been done 12 hours before, after an attack of asphyxia. The fifth death was a male of 28 years who died after 21

days in the respirator. He had a quadriplegia. At autopsy, a 4 cm lung abcess was found. This had been silent as regards fever and three white blood cell counts and was thought to have been 2-3 weeks old. It had not been suspected before death, the immediate cause of which was pulmonary edema. Four of these patients had temperatures to 104° and 105°; all had marked signs of toxicity.

It is planned to make a further report at a later date on poliomyelitis as seen and treated at the 361st Station Hospital.

**POLIOMYELITIS** - The following is a preliminary survey and analysis of cases treated.

Confirmed cases of Poliomyelitis admitted from 18 June 1947 to 1 September inclusive;

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Total cases . . . . .	70 or 100%
Male . . . . .	54 or 77% of total
Female . . . . .	16 or 23% of total
Military . . . . .	34 or 48.6% of total
Civilian . . . . .	36 or 51.4% of total
Adults (over 17 years). . . . .	49 or 70% of total
Children (under 17 years) . . . . .	21 or 30% of total
Male (children) . . . . .	15 or 70% of children
Female (children) . . . . .	6 or 30% of children
Paralytic Type (including 15 Bulbar cases). . . . .	34 or 48.6% of total
Spastic Paralysis & Encephalitic Signs (both children). . . . .	2 or 3% of total
Non-paralytic Type (including 8 abortive cases) . . . . .	36 or 51.4% of total
Abortive Type . . . . .	8 or 11.4% of total
Bulbar Type (11 pure plus 4 combines) . . . . .	15 or 21.1% of total
Adults . . . . .	8 or 53% of Bulbars
Children . . . . .	7 or 47% of Bulbars
Combined Type (Bulbar and Spinal Paralysis) . . . . .	4 or 5.7% of total
Total cases of Respiratory Paralysis . . . . .	6 or 8.6 % of total
Spinal (Intercostals and Diaphragm). . . . .	3 or 4.3% of total
Central (Respiratory Center) . . . . .	3 or 4.3% of total
Mortality . . . . .	5 or 7.1% of total
Adults . . . . .	4 or 8.2% of total
Children . . . . .	1 or 1.4% of total
Mortality in Bulbar cases . . . . .	3 or 20% of Bulbars
Tracheotomy in Bulbar cases . . . . .	2 or 3% of total
Deaths due to Bulbar disease. . . . .	3 or 60% of deaths
Deaths due to complications . . . . .	2 or 40% of deaths
Transitory Bladder paralysis . . . . .	9 or 13% of total
Peak of Incidence (Admissions 8 August 1947) . . . . .	4 or 5.7% of total

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## Peak of Virulence

(deaths within 48 hours of admission 28 July

to 10 Aug 47) . . . . . 2 or 40% of deaths

## Peak of Virulence

(Bulbar cases admitted 24 July to 5 Aug 47). . . . . 6 or 8.6% of total

## Peak of Virulence

(Paralytic cases admitted 20 July to 5 Aug 47) . . . . . 13 or 19% of total

Respirator cases (1 central, 3 spinal) . . . . . 4 or 5.7% of total

Respirator cases surviving . . . . . 1 or 25% of respirator cases

Total days in Respirator (4 patients). . . . . 75 days

## XI. Partial Dentures by Colonel Thomas C. Daniels, Dental Consultant, FEC

It is the intent of the dental service that only such military personnel who do not have a sufficient number of teeth to masticate the army ration be classified in Category I. In official visits made to the dental services in the Far East Command, it was routinely noticed that many I, II and several tooth partial dentures were being made that were not actually needed or essential for mastication of army ration.

Although it is highly desirable to restore all lost teeth, time and the present shortage of dental officers does not permit such a practice. It is extremely difficult and impractical to state that an individual with a given minimum number of teeth does not need a partial denture since the position and occlusion pattern varies in every mouth. It is imperative, however, that every caution be exercised to select only those patients for partial construction who otherwise are unable to properly masticate their food. Class III denture cases should be deferred until all the Class I's are completed. Many more Class I's and II's will be cleared in this theater when such is practiced and fewer dental emergencies will arise.

## PART III

## STATISTICAL

Evacuation and Hospitalization statistical data for the period 30 August to 26 September 1947 will be published in the December issue of the Circular Letter.

~~RESTRICTED~~

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I N D E X

PAGE

Administrative Section . . . . .	1
Army-Navy Medical Procurement Office (Admin., Sect IV) . . .	1
Ether Sedimentation Technique For Routine Stool Examinations (Technical, Sect XII) by Lawrence S. Ritchie, 406th Med. Gen. Lab. . . . .	14
Japanese Medical Research Lab (Admin., Sect VIII) . . . .	2
Major General R. W. Bliss (Admin., Sect II) . . . . .	1
Organization of the Medical Section (Admin., Sect I) . . . .	1
Partial Dentures by Colonel Thomas C. Daniels, Dental Consultant, FEC (Technical, Sect XIII) . . . . .	19
Poliomyelitis Summary, 361st Hospital, by Captain F. J. Mayer MC (Technical, Sect XII) . . . . .	15
Preliminary Report of Activities of Field Team of Army Epidemiology Board in the FEC by W. McD. Hammon, M.D., Gordon Meiklejohn, M.D., Jordi Casals, M.D., and Don M. Rees, PhD. (Technical, Sect XI) . . . . .	5
Pre-Selection School Plan (Admin., Sect IX) . . . . .	3
Prophylactic Supplies (Admin., Sect VI) . . . . .	2
Recent War Department and FEC Publications (Admin., Sect X) . . . . .	4
Statistical Section . . . . .	19
Technical Section . . . . .	5

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Articles for Publication in Circular

It is desired that the Monthly Circular Letter published by the Medical Section GHQ, FEC be of maximum value to all of the Medical Department personnel in the field. To that end, articles of professional or administrative nature that might be of general interest are needed. All Medical Department officers as well as the Commanding Officers of Medical Department units and the Surgeons of the major commands are solicited for articles of administrative or technical value. Such articles should be forwarded so as to reach the Medical Section, FEC, not later than the 20th of the month preceding the publication of the circular in which it is to appear.

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1/18

3